



## Climate change and heat waves in Paris and London metropolitan areas

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<b>Conference:</b>	American Geophysical Union 2010 Fall Meeting 2010 held 13-17 December 2010 (San Francisco, CA)
<b>Year:</b>	2010
<b>Publisher:</b>	American Geophysical Union
<b>Volume:</b>	1
<b>Page:</b>	B11J-02

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### Abstract:

Abstract #B11J-02: Summer warming trends in Western and Central Europe and in Mediterranean regions are increasing the incidence, intensity, and duration of heat waves. Those extreme events are especially deadly in large cities, owing to high population densities, surface characteristics, heat island effects, anthropogenic heat and pollutants. In August 2003, a persistent anticyclone over Western Europe generated a heat wave of exceptional strength and duration with an estimated death toll of 70,000, including 4678 in the Paris region. A series of NOAA-AVHRR satellite thermal images over the Paris and London metropolitan areas, were used to analyze Land Surface Temperature (LST) and its related mortality. In the Paris region, LSTs were merged with land use and cover data to identify risk areas, and thermal indicators were produced at the addresses of ~ 500 elderly people to assess diurnal heat exposure. Results indicate: (i) contrasting night time and daytime heat island patterns related to land use and surface characteristics; (ii) the relation between night-time heat islands and heat waves intensity; (iii) the impact of elevated minimal temperatures on excess mortality, with a 0.5 °C increase doubling the risk of death, (in the temperature range of the heatwave); iv) the correlation between the spatial distribution of highest night-time LSTs and that of highest mortality ratios; and v) the significant impact of urban parks in the partitioning between latent and sensible surface heat fluxes, despite a prior warm and dry spring. Near-real time satellite monitoring of heat waves in urban areas improve our understanding of the LST processes and spatial variability, and of the related heat stress and mortality. These observations provide criteria for warning systems, contingency policies and planning, and climate adaptation and mitigation strategies.

**Source:** <http://abstractsearch.agu.org/meetings/2010/FM/sections/B/sessions/B11J/abstracts/B11J-02.html>

### Resource Description

#### Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Temperature

**Temperature:** Extreme Heat

#### Geographic Feature:

# Climate Change and Human Health Literature Portal



resource focuses on specific type of geography

Urban

## **Geographic Location:**

resource focuses on specific location

Non-United States

**Non-United States:** Europe

**European Region/Country:** European Country

**Other European Country :** France; England

## **Health Impact:**

specification of health effect or disease related to climate change exposure

Morbidity/Mortality

**Population of Concern:** A focus of content

## **Population of Concern:**

populations at particular risk or vulnerability to climate change impacts

Elderly

## **Resource Type:**

format or standard characteristic of resource

Research Article

## **Timescale:**

time period studied

Time Scale Unspecified